

Data Evaluation And Delivery

Accurate materials data are increasingly critical to the rapid design and manufacture of the cost-effective, reliable products that characterize 21st century life. The MSEL Data Evaluation and Delivery Program is working to facilitate the building of interoperable materials structure, phase, and property databases needed by the scientific and industrial communities, and to develop strategies for visualizing multi-dimensional datasets needed for materials selection in product design.

To this end, the FY2002 Projects in the MSEL Data Evaluation and Delivery Program were focused on:

- improving materials data transfer between databases through development of a standard materials mark-up language (MatML);
- developing a major compilation of elastic moduli data for polycrystalline oxide ceramics;
- providing protocols for data evaluation to ensure that databases are populated with accurate data;
- expanding the Ceramics WebBook, which provides links to other sources of ceramic data and manufacturer's information, as well as selected data sets evaluated by NIST, including structural ceramics and high temperature superconductor databases, and glossaries, and tools for analysis of ceramic materials;
- completing the first release of a new Windows-based PC product for the Inorganic Crystal Structure Database in cooperation with Fachinformationszentrum (FIZ) Germany
- producing phase diagrams through the NIST/American Ceramic Society, Phase Equilibria Program;
- developing approaches to viewing multidimensional mechanical property and phase diagram data for metals, through a series of simple - but useful - interactive calculations;
- establishing a prototype site for linking NIST materials data with external datasets such as those developed and maintained by ASM International; and
- developing a comprehensive database of critically evaluated properties of lead-free solders, including multi-dimensional data from three national consortia, the National Center for Manufacturing Sciences (NCMS) Lead-Free Solder Project, the NCMS Fatigue Resistant Lead-Free Solder Project, and the National Electronics Manufacturing Initiative (NEMI) Lead-Free Assembly Project.